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*5) 84-20 Tokyo Municipal Komagome Hospital  
(Japan)*

## SUBJECT OF INVESTIGATION

THE STUDY  
ON  
THE PATHOGENESIS  
OF  
INTESTINAL INFECTIONS.

## RESPONSIBLE INVESTIGATOR

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✓ In this quarterly report, the pathohistological findings of the intestinal membrane by rectal biopsies will be mentioned.

The majority of cases were patients with bacillary dysentery. Biopsy of the mucosa was performed with forceps by sigmoidoscopic examination. The specimens were fixed in Zenker's solution immediately, paraffin sections were made, and stained with Hematoxylin-Eosin solution and, if necessary, Mallory's staining was used.

The pathohistological findings of the intestinal membrane of patients with bacillary dysentery were as follows:

In the early stage:

- 1) Edema, infiltration of inflammatory cells and hemorrhage of the tunica propria were found.
- 2) The goblet cells of the glandular epithelium decreased markedly, and the gland appeared to be dark.
- 3) The so-called ghost cells, swollen honeycomb-like histiocytes were seen.
- 4) Some of the glands were destroyed.
- 5) Hyperemia of capillary vessels of the tunica propria was found.

On the first day of illness, biopsy was carried out by only one case. Mild edema and hyperemia of the capillary vessels were seen in the tunica, but no hemorrhage was seen. Goblet cells of the glandular epithelium were not reduced. The appearance of columnar epithelium was good. Some area showed mushroom-like proliferation of epithelial cells.

In the second week of illness:

There were different degree of inflammatory cellular infiltration and hemorrhage at the tunica propria of the

mucosa and reduction of goblet cells. The destruction of superficial parts of the mucosa was found in some cases, and at the same time, epithelial regeneration was recognized in other parts of the mucosa in these cases. Numbers of plasma cells increased gradually among the inflammatory cellular infiltration, though polynuclear leucocytes were numerous in the early stage.

The typical histological pictures of the ulcers were relatively rarely observed. The surface of such ulcers were covered incompletely with regenerated epithelial cells, and at the circumstances of the ulcers marked inflammatory cellular infiltration was seen.

In the third and fourth week of illness:

Glands became lighter because of the prominent regeneration of the goblet cells. Columnal epithelial cells became taller and well-arranged. However, in the tunica propria, there were still localized cellular infiltration and mild hemorrhage in the majority of cases during the period of third or fourth week of illness.

In some cases, immediately below the columnal epithelium, mild edema remained still.

Histologically, the healing appeared to be incomplete even in this stage.

By the histological investigations of biopsy specimens of the intestinal mucosa, the pathohistological findings of bacillary dysentery described in the textbooks of pathology were reaffirmed. Besides, some facts which were not described in the previous reports, were found. For example:

1) Goblets cells react to inflammation very sensibly and disappear.

2) The picture of the capillary stasis of the tunica propria of the mucosa which is considered important in the development of the pathological changes in this disease are sometimes found.

3) Invasion of leucocytes in the columnal epithelium and glandular epithelium, and accumulation of leucocytes in the glandular cavities are recognized in some cases.

4) Epithelial regeneration are seen at very early stage.

5) Long standing hemorrhage and cellular infiltration of the tunica propria of the mucosa are found.

Though most autopsy materials have been from severe cases of bacillary dysentery, many of the biopsy materials were obtained from relatively mild cases and also at every stage of the disease. Therefore, the facts observed in this investigation may be different from those of autopsy cases, however it may be possible, they will give important keys for the understanding of the pathogenesis of this disease.